



SPARKS OF JOY, SHADOWS OF CONCERN: EXPLORING THE COMPLEXITIES OF SIVAKASI'S FIREWORKS INDUSTRY.

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ABSTRACT:

The symphony of celebration is composed by the hands of firework labourers, creating sparks of joy. However, behind the dazzling displays and colourful explosions lies a complex industry fraught with dangers and challenges. The crackers which excite all people is not made in easy way, it involves the sweat and skill of dedicated labourers. Firework labourers are the unsung heroes of celebration who paint the night with their dedication. The fireworks industry in Sivakasi, India, is a significant contributor to the local economy. However, the production of fireworks raises concerns about the safety of workers and the impact on the environment. This research paper aims to explore the regulatory framework governing the fireworks industry in India, with a specific focus on Sivakasi. The paper will examine the key legislations which establish guidelines for worker safety and environmental control. Additionally, the paper will discuss the enforcement of laws and programs prohibiting child labour and ensuring compliance with safety and environmental norms. The evolving nature of these regulations and the role of government agencies in promoting community engagement and safety awareness will also be addressed. By shedding light on these aspects, this research paper seeks to provide a comprehensive understanding of the regulatory landscape surrounding the fireworks industry in Sivakasi.

Key words: Fireworks, Regulations, Safety, Sivakasi, Workers.

INTRODUCTION.

Sivakasi stands as a confluence where the splendour of celebration meets the intricate challenges of safety and sustainability. This unique town encapsulates the multifaceted nature of fireworks—an embodiment of joy, economic prosperity, and inherent risks. Serving as the beating heart of the city, the fireworks industry bestows meaning and purpose upon the local workforce. However, the hands of these workers bear the enduring mark of darkness as they craft the crackers that illuminate our skies. The demand for Sivakasi's products extends not only across India but also to various corners of the globe, expanding the market size of the fireworks industry. With numerous factories producing a diverse array of firecrackers and fireworks for various events and festivals, the town has evolved into a prominent industrial center for fireworks production. The exponential growth of the industry, however, has given rise to concerns regarding safety, environmental impact, and working conditions.

To address these concerns, a multitude of laws and safety regulations have been enacted over time. In recent years, there has been a heightened focus in Sivakasi on promoting safer and more environmentally friendly pyrotechnics. Initiatives have also been launched to tackle labor issues and enhance working conditions for those employed in the sector. As Sivakasi navigates the delicate balance between celebration and responsibility, the town is poised to continue evolving, embracing advancements that prioritize the well-being of its workers and the environment.

ECONOMIC SIGNIFICANCE:

The Indian fireworks industry is one of the most important economic sectors in the country. It plays a vital role in the regional and country-wide economy of India and is a major source of employment for millions of people. The industry employs a wide range of people, from skilled workers and technicians to laborers and administrative staff in the industry. The industry's workforce ranges from mid-skilled to high-skilled craftsmen. The Sivakasi fireworks industry holds significant economic importance for both the state and the country. Providing employment to over 25,000 individuals, it is heavily reliant on three key sectors: pyrotechnics, safety matches, and offset printing. With an annual production of nearly 50,000 tons of firecrackers, the industry generates a turnover of approximately INR 350 crore. Notably, the government of Tamil Nadu collects around INR 40 million through nuisance tax from these fireworks businesses. However, the industry is currently facing economic uncertainty due to bans imposed by several states on crackers. Despite this challenge, the Sivakasi fireworks sector, valued at INR 6,000 crore, continues to grow at an impressive rate of 10% annually. Positioned as the capital of India's firecracker industry, Sivakasi boasts 8,000 factories and contributes 90% of the country's fireworks output. With an eye on the global market, the industry aims to gain a share of the business dominated by Chinese players, focusing on environmentally friendly practices to fuel its expansion further.

In addition to providing economic opportunities, the fireworks industry is also supported by numerous SMEs (Small and Medium Enterprises) which help in the development of the ancillary industry and businesses related to the fireworks sector. Sivakasi's fireworks industry is more than just the factories - it has a huge impact on related industries like transportation, packaging and raw materials. It boosts different service industries like hospitality and retail, and the town benefits from it. It leads to economic growth, better infrastructure and more business opportunities. Hotels, restaurants and transportation services all thrive because of the industry. But it's not just the manufacturing process - the fireworks industry also offers job opportunities like marketing, selling, distribution and design.

PREVAILING WORKING CONDITIONS AND SAFETY PRECAUTIONS.

The Safety and Occupational Health Survey conducted in Sivakasi's fireworks units highlighted prevalent unsafe acts and conditions within the industry. Accidents in this sector stem from the lack of awareness among factory owners and workers about safety measures, as well as non-compliance with safety requirements. Workers in fireworks production are exposed to various health hazards, primarily due to poor air quality, leading to significant health issues. The majority of these workers lack proper training, especially in handling explosive chemicals, making accidents more likely. The government of Tamil Nadu has faced accusations of corruption for allowing hazardous operating conditions to persist in these units. Government officials often fail to adequately monitor the industry and are alleged to accept bribes to overlook safety deficiencies. Moreover, the industry faces economic uncertainty due to bans and regulations, posing threats of unemployment and economic losses for the workers.

Safety concerns are important for both well-being of the workers and the surrounding community. There should be future advancements to ensure safety to the workers. Ensuring the safety of workers in the hazardous environment of Sivakasi's fireworks industry requires strict adherence to technical safety precautions. Providing workers with essential Personal Protective Equipment (PPE) like gloves, goggles, helmets, and masks is crucial to shield them from dangerous chemicals and fumes. Additionally, employees must wear cotton clothes and anti-static shoes to prevent static electricity, which can ignite chemicals, avoiding synthetic attire. Proper training in

handling explosive chemicals, emphasizing timely completion of tasks like filling, rolling, and fuse fixing, is essential. It is imperative to store boxes of fireworks at accessible heights, prohibiting open flames in storage areas and using rubber mats to minimize friction. Adequate ventilation must be ensured to prevent the buildup of hazardous fumes, and fire safety measures such as extinguishers, alarms, and sprinkler systems should be installed. Workers need to be well-versed in fire safety protocols and evacuation plans. Licenses for fireworks units vary based on the work nature, types of crackers, and ingredients, specifying room occupancy limits and maximum chemical storage capacities to maintain a safe working environment.

Advanced automation like robotics can be introduced to reduce human interaction with explosive materials and stable pyrotechnic materials usage can improve the safer environment. Real-time monitoring systems to continuously monitor conditions inside the manufacturing facility, such as temperature, humidity, chemical composition, etc. to detect anomalies and initiate automatic safety measures; set up a thorough safety training and certification program for all employees; update and improve safety training regularly to ensure workers are up-to-date with the latest safety practices; set up advanced environmental controls for capturing and treating emissions and reducing the impact on air quality and water quality; collaborate with research institutions to carry out studies on safety procedures and cutting-edge technologies within the fireworks industry. Adopting sustainable practices in manufacturing to promote responsible manufacturing. These future improvements can significantly improve safety in the industry of Sivakasi to reduce accidents and promote responsible manufacturing. It's really important to make sure everyone in the fireworks industry stays safe, not just for the lives of workers, but also for the safety of the community.

CHILD LABOUR IN SIVAKASI FIREWORKS INDUSTRIES:

Child labor remains a persistent issue in the fireworks industry of Sivakasi, India, despite ongoing attempts to address the problem. The industry has a historical association with child labor dating back to the 1980s, with estimates indicating the employment of at least one lakh child laborers. Efforts by the state government, including the implementation of a child labor project promoting education over hazardous work, have not fully mitigated the problem.

A report by India Today sheds light on the alarming statistic that out of a total workforce of 100,000 in the match and fireworks industries in Sivakasi, approximately 45,000 are child workers, most of whom are below 14 years of age. The preference for child labor by factory owners, driven by perceived efficiency and dependability, exacerbates the issue.

Despite initiatives to combat child labor, such as strengthened state controls and fines for employing children under 14, the problem persists in the fireworks production sector, as indicated by a report from Hope for the Future. An investigation by India Today further reveals that around 90% of children engaged in fireworks manufacturing suffer from health issues like asthma, eye diseases, and tuberculosis due to exposure to hazardous conditions.

The workforce in these factories predominantly comprises children, adolescents, and women who lack formal training, work without safety gear or machinery, and are engaged in direct contact with explosive materials, particularly in filling gunpowder into crackers. The preference for child labor persists despite the existence of the Child Labour (Prohibition and Regulation) Act since 1986. Nobel Prize winner Kailash Satyarthi has asserted that the industry employs at least one lakh child laborers.

The hazardous working conditions not only perpetuate the problem of child labor but also expose these young workers to severe health issues. Although efforts have been made to curb child labor in the industry, the situation remains critical, emphasizing the need for increased measures to protect children from exploitation, ensuring their right to education and a safe childhood.

In the case of M.C. Mehta vs. State of Tamil Nadu and others (1996), the bench, comprising Kuldip Singh, B.L. Hansaria, and S.B. Majmudar, shed light on the state's attitude towards eradicating child labor. The framers of the Constitution foresaw the crucial role of nurturing and educating children in realizing India's vision. Despite this foresight, the harsh reality is that, like many other nations, children in India are often subjected to exploitation. Sivakasi, in particular, was identified as a major violator of child labor laws.

In response to this intolerable situation, the public-spirited lawyer, Shri MC Mehta, invoked the power of the court under Article 32. The violation of the fundamental right of children, guaranteed by Article 24, prompted him to file this petition. Considering the provisions of Article 39(f) and 45 of the Constitution, the court issued specific directives on enhancing the quality of life for children employed in factories. Recognizing the need for oversight, the court deemed it necessary to establish a committee to monitor the implementation of these directives.

The committee presented its report on 11.11.1991, including several recommendations:

- (a) The State of Tamil Nadu should ensure the non-employment of children in fireworks factories.
- (b) Children engaged in packing activities in match factories should operate in a designated area exclusively for packing purposes.
- (c) Employers should be prohibited from requiring children to work for more than six hours a day.
- (d) Adequate transportation facilities for children's travel to and from their homes and workplaces should be provided by employers and the State Government.
- (e) Provisions for recreation, socialization, and education should be made either within the factory premises or in close proximity.
- (f) Employers must make provisions for the basic diets of children, and in the event of failure, the government may be directed to ensure a basic diet.
- (g) The abolition of piece-rate wages is recommended, with payment to be made on a monthly basis, reflecting the work done by the children.
- (h) All workers in the industry should be included in the Insurance Scheme.
- (i) A committee, headed by a retired High Court Judge, along with two social workers, should replace the existing committee in the Sivakasi area. Employers should deposit Rs.2/- per month per worker towards the welfare fund, with the State providing a matching contribution.
- (j) The establishment of a National Commission for Children's Welfare is recommended to formulate a phased scheme for the abolition of child labor, directly reporting to and being accountable to the court.

The record includes reactions from the All-India Chamber of Match Industries, Sivakasi, and the Government of India's awareness of various aspects of child labor. Poverty, lack of opportunities, intermittent income, and low living standards contribute to the widespread prevalence of child labor, extending beyond Sivakasi.

ACCIDENTS:

The Sivakasi fireworks industry has unfortunately witnessed several accidents in its history, underscoring the pressing need for improved safety regulations to avert future tragedies. Urgent measures are essential to protect both workers and neighboring communities. The following incidents highlight the critical necessity for enhanced safety protocols:

In a recent occurrence this year, in October 2023, two firework factories exploded, resulting in the tragic loss of 14 lives. This major incident transpired in preparation for Diwali in November, a crucial period for the 100-year-old fireworks industry in Sivakasi, contributing to around 90% of India's fireworks production. The first explosion took place in Rengapalayam village, claiming the lives of 13 workers. An inquiry revealed unauthorized storage of firecrackers, causing a sudden explosion. The injured were promptly treated, and the police, by Tuesday evening, had identified only eight bodies. The factory owner, operating with a license from the Petroleum and Explosives Safety Organization, faced arrest as the license was found lacking the necessary permissions for storage. Simultaneously, in Kitchanaickenpatti village, another accident occurred where a worker lost his life while handling chemicals in a licensed unit. The lack of supervision and safety measures in these units emerged as primary factors leading to accidents and explosions. The Chief Minister announced compensation for the affected families and injured individuals.

Adding to this, a tragic incident unfolded at a Sivakasi firework factory in 2012, claiming the lives of 54 individuals. Despite being the cracker manufacturing hub, Sivakasi has witnessed numerous accidents, but this one stands out as particularly devastating. The victims, including workers and those attempting rescue, succumbed to a blaze that erupted during the mixing of chemicals for fancy fireworks. The production, stored against official advice, generated thick, suffocating smoke, hindering firefighting efforts. Over the past 12 years, 237 lives have been lost in accidents across 88 fireworks units in Sivakasi. The government has tightened safety controls, acknowledging the need for stricter measures. The victims, most of whom suffered severe burns, were mourned by Tamil Nadu's Chief Minister, who announced financial relief for their families from the Chief Minister's General Relief Fund.

These incidents underscore the imperative for immediate action to enhance safety protocols in the Sivakasi fireworks industry, ensuring the well-being of workers and the surrounding communities.

STATE REGULATIONS & POLICY INITIATIVES.

The fireworks assiduity in Sivakasi is subject to colorful government programs and regulations to ensure safety, environmental responsibility, and ethical practices. These programs are aimed at balancing the artistic and profitable significance of the assiduity with the need for safety and environmental protection. The Explosives Act, 1884 regulates the manufacture, possession, use, trade and transport of snares. It sets the frame for the safe running of explosive accoutrements used in fireworks product. Fireworks manufacturers in Sivakasi are needed to gain licenses from the Chief Controller of explosives under the Ministry of Commerce and Industry, Government of India. The license specifies the type and volume of fireworks that can be produced. Compliance with environmental regulations, similar as air and water quality norms, is essential. The Environment (Protection) Act, 1986, empowers the Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs) to apply environmental standards. Laws and programs proscribing child labor in dangerous diligence, including fireworks manufacturing, are rigorously executed. The Factories Act, 1948, governs the employment of workers in manufacturing units. State governments may have their own regulations and programs related to the fireworks assiduity. In Tamil Nadu, where Sivakasi is located, the Tamil Nadu Factories Rules govern colorful aspects of plant operations, including safety measures. Regular safety examinations and checkups by government authorities ensure compliance with safety norms and regulations. Government agencies may encourage community engagement and mindfulness programs to educate the original population about

safety measures and to address any enterprises related to the assiduity's operations. It's important to note that these programs and regulations may evolve over time to address arising safety and environmental enterprises. The government plays a critical part in balancing the profitable significance of the Sivakasi fireworks assiduity with the need to ensure the safety of workers and the well- being of the original community.

The regulations governing the fireworks industry in India are outlined in several key legislations. The Factories Act of 1948 establishes comprehensive guidelines concerning the safety, health, and well-being of workers in factories, including those producing fireworks, addressing machinery usage, hazardous substance handling, and working conditions. Additionally, the Air (Prevention and Control of Pollution) Act of 1981 and the Environment (Protection) Act of 1986 specify rules for environmental control, encompassing the use of fireworks. The Explosives Act of 1884 governs the entire process of manufacturing, storage, transportation, and sale of explosives, including fireworks, detailing licensing requirements. Furthermore, the Indian Penal Code of 1860 delineates penalties for individuals breaching safety regulations. In summary, these legislations collectively delineate stringent rules pertaining to the manufacturing of fireworks, worker safety, pollution control, licensing procedures, and associated legal consequences within the Indian fireworks industry.

The government of Tamil Nadu has implemented various policy initiatives to bolster the Sivakasi fireworks industry and safeguard the welfare of its workers. These measures encompass the issuance of licenses and regulations aimed at ensuring the safety of employees within the industry. Furthermore, the government has actively promoted the adoption of eco-friendly practices, encouraging the production of green crackers in Sivakasi, which emit fewer pollutants than traditional counterparts. The recent establishment of the National Environmental Engineering Research Institute (NEERI) lab in Sivakasi by the Council of Scientific and Industrial Research (CSIR) has further supported these efforts. Additionally, the government has conducted comprehensive safety and occupational health surveys in fireworks units, pinpointing unsafe practices and conditions and proposing measures for improvement. Worker training programs in the proper handling of explosive chemicals have been actively endorsed, emphasizing essential guidelines within manufacturing unit and good downs to mitigate fire risks. In summary, these policy initiatives underscore the government's commitment to ensuring the safety and well-being of Sivakasi's fireworks industry workforce.

SUGGESTIONS TO GUARANTEE EMPLOYEE SAFETY:

A comprehensive Code of Practice for Occupational Safety and Health (OSH) in Fireworks Manufacturing Factories has been crafted and disseminated to stakeholders. The Directorate of Industrial Safety and Health, Government of Tamil Nadu, can enforce this code as an Emergency Standard under Section 41E of The Factories Act, 1948.

To safeguard the well-being of fireworks factory workers, it is mandatory to undergo both induction training and periodic training on OSH, conducted at least once every six months. No worker is allowed to engage in work without successfully completing these sessions, as mandated by The Factories Act, 1948, and Tamil Nadu Factories Rules, 1950.

Officials from the Directorate of Industrial Safety and Health, Government of Tamil Nadu, must undergo periodic training on fireworks safety provided by the Directorate General Factory Advice Service and Labour Institutes, Mumbai/Regional Labour Institute, Chennai, at least once a year.

Participation in periodic workshops and training programs organized by the Directorate General Factory Advice Service and Labour Institutes (DGFASLI) is essential for fireworks factory owners, employees, and government officials.

In alignment with Section 41D of The Factories Act, 1948, the Government of India may appoint an Inquiry Committee to investigate health and safety standards in fireworks manufacturing factories. Accident investigation reports must be uploaded to the DGFASLI website.

Clear eligibility criteria, including qualifications, experience, and the successful completion of induction and periodic training, must be outlined for workers, foremen, and supervisors in fireworks manufacturing factories. Internal pathways within these facilities should be meticulously designed and maintained to mitigate slip, trip, and fall hazards. Implementation of measures addressing the prevention of static charge accumulation and the facilitation of charge dissipation is crucial. To maintain safety standards and prevent overproduction, each fireworks manufacturing factory should have production limits established and closely monitored based on its licensed capacity. Adherence to common and uniform enforcement standards for Occupational Safety and Health (OSH) in both PESO and DRO licensed factories is imperative. Collaborative efforts among DISH, FRDC, PESO, and RLI are indispensable for proactively advancing OSH in fireworks manufacturing factories.

CONCLUSION:

The Sivakasi fireworks industry stands as a multifaceted sector, bringing both joy and economic prosperity while grappling with inherent dangers and complexities. Its substantial economic impact resonates through the region and the nation, serving as a vital source of employment for a myriad of workers. Nevertheless, this industry is not without peril, presenting notable safety and environmental challenges that expose workers to various health risks. The government, recognizing these challenges, has implemented regulations and policies aimed at safeguarding workers and the environment. Despite these efforts, there remains an urgent call for enhanced safety protocols to avert potential tragedies.

Recent incidents in the industry underscore the critical need for immediate measures to shield both workers and the neighboring communities. The government's commitment to ensuring the safety and well-being of the Sivakasi fireworks industry workforce is evident in its policy initiatives. These include the active promotion of eco-friendly practices and the establishment of the National Environmental Engineering Research Institute (NEERI) lab in Sivakasi.

To propel the industry towards a safer future, advancements such as increased automation, real-time monitoring systems, and sustainable practices are crucial. These innovations not only enhance safety but also foster responsible manufacturing. Ensuring the well-being of everyone involved in the fireworks industry is paramount, not just for the workers' lives but also for the overall safety of the community. The collaborative efforts of the government, industry stakeholders, and the adoption of cutting-edge practices are imperative to usher in a new era of safety and sustainability in the Sivakasi fireworks industry.

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